winding and one secondary winding wound about a common axis comprising:

a first bobbin member including

a first body portion defining a first hollow region, and

axially spaced walls extending radially away from the first body portion; and

a second bobbin member including

a second body portion defining a second hollow region,

axially spaced walls extending radially away from the second body portion, and

a flange mounted on one of said axially spaced walls of said second bobbin member and extending away from another of said axially spaced walls of said second bobbin member; and

wherein the first bobbin member is disposed adjacent to the second bobbin member and is partially enclosed by the flange, said primary and secondary windings respectively wound about said first and ~~second body~~ portions.

REMARKS

The above Amendments and these Remarks are submitted under 35 U.S.C. § 132 and 37 C.F.R. § 1.111 in response to the Office Action mailed November 7, 2001.

Summary of the Examiner's Action and Applicants' Response

The Examiner rejected Claims 1-14 under 35 U.S.C. § 112, second paragraph. Claims 1, 4, 5, 9, 15, and 16 have been rejected by the Examiner under 35 U.S.C. §102(b). The Examiner rejected Claims 2, 3, 6-8, and 10-13 under 35 U.S.C. §103(a). In this Amendment, Claims 1, 6, 13, and 16 have been amended. After entry of this Amendment, Claims 1-16 will be pending.

Response to Rejection of Claims 1-14 under 35 U.S.C. §112, second paragraph

The Examiner rejected Claims 1-14 under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as his invention.

In rejecting Claim 1, the Examiner stated that Applicant should clarify which axially spaced walls are intended at line 9. Although Applicant respectfully submits that it would be clear to one of ordinary skill in the art which axially spaced walls are intended, Claim 1 has been amended to make the claim more clear. It is respectfully submitted that the above described amendment to

Claim 1 is sufficient to overcome the Examiner's §112 rejection. Similarly, Claim 16 has been amended to make clearer the axially spaced walls for the second bobbin member. In addition, Claim 6 has been amended to correct a minor typographical error.

Regarding Claim 2, the Examiner contends that the term "substantially" is a relative term and thus objectionable under 35 U.S.C. §112, second paragraph. Applicant respectfully disagrees. Applicant notes that the term "substantially" is often used in claims to prevent a potential infringer from avoiding literal infringement simply by making a minor modification to the claimed invention. The United States Court of Appeals for the Federal Circuit has recognized that the word "substantially" is patent claims gives rise to some definitional leeway for the element or limitation which "substantially" modifies. *See Seattle Box Co. v. Industrial Crating & Packing*, 221 USPQ 568, 576 (Fed. Cir. 1984). Applicant is not aware of any case authority which precludes the use of the term "substantially" in a patent claim. Applicant therefore respectfully submits that Claim 2 is not indefinite under §112.

The Examiner states that Applicant should clarify in Claim 9 "what is intended by the first body portion forming a tubular portion extending away from the first body portion". Applicant respectfully disagrees that such a clarification is necessary. Applicant respectfully submits that Claim 9 does not claim "a first body portion forming a tubular portion" as the Examiner states. Claim 9 recites "[T]he transformer of claim 1 wherein the first bobbin member includes a tubular portion extending away from the first body portion and is disposed to receive a core passing through the first hollow region." (emphasis added) Figs. 7 and 12 of Applicant's specification show a tubular portion 49 of the first bobbin member 40 that can be inserted within the hollow region of the second body portion 29 (shown in FIG. 6b) so that the first and the second bobbin members are coupled together without requiring a shroud or cover (Page 10, lines 15-19). The tubular portion 49 increases the creepage distance between a conductive layer, positioned between the first and second bobbin members, and the core passing through the bobbin member (Page 10, lines 21-23). Applicant therefore respectfully submits that Claim 9 is not indefinite under §112.

The Examiner contends that the phrase "adapted to" in Claims 10 and 13 is unclear because it has been held that the recitation that an element is "adapted to" perform a function is not a positive limitation, but only requires the ability to perform. Applicant respectfully disagrees. In support of the rejection, the Examiner cites a 1946 case, *In re Hutchison*, 69 USPQ 138, 33 CCPA 879 (1946), and MPEP 706.03(c). MPEP 2173.05(g) cites a more recent case, *In re Venezia*, 530 F.2d 956, 189 USPQ 149 (CCPA 1976), wherein the "adapted to" clause was expressly sanctioned

by the court. Moreover, Applicant finds no authority in MPEP 706.03 which precludes the use of the phrase "adapted to". Applicant therefore respectfully submits that Claim 10 is not indefinite under §112.

The Examiner also stated that applicant should clarify the specific structure of the recess arrangement in Claim 13. In response, Applicant has amended Claim 13 to omit the phrase "adapted to" and to further patentably define the recess structure. It is therefore respectfully submitted that the above described amendment to Claim 13 is sufficient to overcome the Examiner's §112 rejection.

Response to Rejection of Claims 1, 4, 5, 9, 15, and 16 under 35 U.S.C. §102(b)

Claims 1, 4, 5, 9, 15, and 16 have been rejected under 35 U.S.C. §102(b) as being anticipated by Cook, et al. (U.S. Patent No. 4,000,483). Applicant respectfully disagrees.

For a prior art reference to anticipate in terms of §102, the elements must be arranged as required by the claim. *See In re Bond*, 910 F.2d 831 (Fed. Cir. 1990). As discussed below, Cook, et al. does not teach the elements arranged as recited in the rejected claims.

Claim 1 calls for a transformer having a first bobbin member and a second bobbin member. A flange is on one of the axially spaced walls of the second bobbin member and extends away from the other axially spaced walls of the second bobbin member. The first bobbin member is disposed on the second bobbin member and is partially enclosed by a flange. Fig. 1 shows a flange (21) partially enclosing the first bobbin member 40. Cook, et al. does not teach a flange partially enclosing the first bobbin member as recited in Claim 1. Cook, et al. teaches a transformer that has fins (30) on the periphery of a flange of a bobbin (20) (Fig. 1, Col. 2, lines 11-15, and Col. 3, lines 8-18). As shown also in Figs 2 and 6 in Cook, et al., the fins (30) do not partially enclose bobbin 35. Thus, Cook, et al. does not teach the structure recited in Claim 1.

In addition, Cook, et al. teaches a transformer with a structure requiring a cover (or shroud) having a pair of cover elements 50, 51 (Col. 3, lines 54-55 - Col. 4, line 5). These cover elements have "webs" 72,73 dimensioned to terminate at the fins 30 (Col. 4, lines 23-37). The cover elements taught in Cook, et al. also have extensions 78 and 79, seen in Figs. 1 and 6, and provide a receptacle for the bobbin 35, **not** the fins (Figs. 1 and 6, col. 4, lines 38-46). Therefore, the structure recited in Claim 1 is not taught by Cook, et al.

Moreover, the claims of the present invention do not recite use of a cover. The cover elements are shown in each and every one of the figures in Cook, et al. (Figs. 1-6). Cook, et al.

teaches that these cover elements provide large surface creepage distance and extra thick insulation (Col. 2, lines 12-22). The transformer of the present invention is advantageous over the prior art, since the creepage distance between the windings of a transformer according to the present invention is increased while, at the same time, providing a smaller and lower profile than known transformers (Page 10, lines 17-21). Cook, et al. teaches a structure with a thick cover (shroud) that requires excessive extra space, thus teaching away from the lower profile, smaller size of the transformer of the present invention. Therefore, Applicant respectfully submits that Cook, et al. does not anticipate Claim 1. Claims 4, 5, and 9 depend from Claim 1 and are respectfully submitted as not anticipated by Cook, et al. for the same reasons as for Claim 1.

In addition, in Claim 9 the first bobbin member is defined to include a tubular portion extending away from the first body portion. Applicant respectfully submits that Cook, et al. does not teach this tubular portion element recited in Claim 9. Moreover, the Examiner does not include in the Office Action any indication of a teaching in Cook, et al. of this tubular portion element. As shown in Figs. 7 and 12 of Applicant's specification, the first bobbin member 40 has a tubular portion 49 that can be inserted within the hollow region of the second body portion 29 (shown in FIG. 6b) so that the first and the second bobbin members are coupled together without the need to use a shroud (Page 10, lines 15-19). The tubular portion 49 can also increase the creepage distance between a conductive layer, positioned between the first and second bobbin members, and the core passing through the bobbin member (Page 10, lines 21-23). By contrast, Cook, et al. teaches use of a cover/shroud and does not teach this tubular structure. Thus, on this further basis, Applicant respectfully submits that Claim 9 is not anticipated by Cook, et al.

Claim 15 claims a transformer having a first bobbin member including a first body portion that defines a first hollow region, an axially spaced wall, and a flange. The flange as recited in Claim 15 is for increasing the creepage distance between a core disposed within the first hollow region and a coil disposed between the axially spaced walls. Fig. 2 of the present application shows a flange (23) to increase the creepage distance between the winding (coil, shown in Fig. 1) on the second bobbin member 20 and the core 70 (Page 8, lines 13-19). Cook, et al. does not teach a flange structure as claimed in Claim 15. Cook, et al. teaches that a fin (30), identified by the Examiner as a flange, provides additional creepage distance between the primary winding and secondary winding (Col. 2, lines 11-24). Even assuming arguendo that this fin 30 is a flange, Cook, et al. does not teach a flange to provide the creepage distance between the core and the coil as also claimed in Claim 15. Therefore, Applicant respectfully submits that Claim 15 is not anticipated by

Cook, et al.

Claim 16 claims a transformer wherein a bobbin member is partially enclosed by a flange. Cook, et al. does not teach this flange structure as recited in Claim 16. As discussed above, the fins taught in Cook, et al. do not partially enclose the bobbin. Moreover, Cook, et al. also includes cover elements which increase the thickness of the transformer. The present invention has the advantage of increasing creepage distance while reducing the size of the transformer by the space that might otherwise be taken up by the cover elements (Page 10, lines 17-21). Therefore, Applicant respectfully submits that Cook, et al. does not anticipate Claim 16.

Response to Rejection of Claims 2, 3, 6-8, and 10-13 under 35 U.S.C. §103

Claim 2 has been rejected under 35 U.S.C. §103(a) as being unpatentable over Cook, et al. in view of Estrov (U.S. Patent No. 5,010,314). The Examiner contends that Cook, et al. discloses the invention claimed in Claim 2 except for the two flange portions being perpendicular to each other. The Examiner further contends that it would have been obvious at the time the invention was made to use the bobbin design of Estrov in Cook, et al. for the purpose of protecting the core structure. Applicant respectfully disagrees.

There is no motivation or suggestion in either Estrov or Cook, et al. to modify Cook, et al. in the manner asserted by the Examiner. The Examiner has relied upon the statement that "it would have been obvious to one having ordinary skill in the art," without explaining the reasons why it would have been obvious to do so, as required. *See In re Lee* (CAFC, 00-1158 , January 18, 2002). The general knowledge of one of ordinary skill must be articulated and placed on the record. *Id.* The Examiner has not identified any specific hint or suggestion in a particular reference to support the combination of Cook, et al. and Estrov. Moreover, Estrov teaches a low-profile planar transformer for meeting creepage and clearance requirements (Col. 3, lines 6-14). As discussed above, Cook, et al. does not teach or suggest a low profile transformer, but is instead directed to a design "capable of improved heat dissipation" (Col. 1, lines 28-34, Col. 2, lines 25-38). Cook, et al. teaches away from a low-profile planar transformer by requiring cover elements that provide extra thick insulation and an expanded profile (Col. 2, lines 12-22). Thus, there is not suggestion or motivation to combine the teaching of Cook, et al. and Estrov. Neither Cook, et al. nor Estrov teach or suggest the transformer structure of Claim 2. Therefore, Applicant respectfully submits that Claim 2 would not be obvious over Cook, et al. in view of Estrov.

Claim 3 has been rejected under 35 U.S.C. §103(a) as being unpatentable over Cook, et al. in view of Dobberstein (U.S. Patent No. 4,549,130). The Examiner contends that Cook, et al. discloses the invention claimed in Claim 3 except for a conductive shielding used in the bobbin structure. The Examiner further contends that it would have been obvious at the time the invention was made to use conductive shielding between the bobbin members of Cook, et al. as suggested by Dobberstein, for the purpose of reducing interference. Applicant respectfully disagrees.

Dobberstein teaches a transformer including a telescopic bobbin assembly for use in VHF switching power supplies (Col. 1, lines 59-67). Dobberstein discloses that VHF operation requires significant changes in transformer construction (Col. 1, lines 29-31). Cook, et al. does not teach VHF operation. Dobberstein thus teaches away from the structure of Cook, et al. by requiring "significant changes" in the structure for the VHF operation application that is not taught in Cook, et al. The references must be viewed without the benefit of impermissible hindsight vision afforded by the claimed invention. MPEP 2141. Applicant respectfully submits that the rejection of Claim 3 is impermissible hindsight since one of ordinary skill in the art would not be motivated to combine the teachings of Cook, et al. and Dobberstein in the manner suggested by the Examiner.

In addition, the telescopic bobbin assembly taught in Dobberstein teaches a telescopic bobbin assembly which is far different from the structure recited in Claim 3. Neither Cook, et al. nor Dobberstein teach or suggest the transformer structure of Claim 3. Moreover, the Examiner has relied upon the statement that it would have been obvious to one having ordinary skill in the art to combine the shield in Dobberstein with the bobbin members of Cook, et al, to reduce interference, without placing on the record the required teaching, or suggestion or motivation to support the combination, as required by *In re Lee, supra.* Therefore, for all the above reasons, Applicant respectfully submits that Claim 3 would not be obvious over Cook, et al. in view of Dobberstein.

Claim 6 has been rejected under 35 U.S.C. §103(a) as being unpatentable over Cook, et al. in view of Eng, Jr., et al. (U.S. Patent No. 4,857,878). The Examiner contends that Cook, et al. discloses the invention claimed in Claim 6 except for the bobbin including pins. The Examiner further contends that it would have been obvious to one of ordinary skill in the art at the time the invention was made to include pins in the bobbin structure of Cook, et al. as suggested by Eng Jr., et al., for the purpose of providing terminals for the windings. Applicant respectfully disagrees.

Claim 6 claims a transformer wherein each of the first and second bobbin members comprises of a plurality of pins. The pins may be used to couple the transformer to an external electrical device such as a printed circuit board (Page 5, lines 13-14). Cook, et al. does not teach the

use of a transformer coupled to a circuit board. As discussed above, Cook, et al. teaches a structure having large, extra thick cover elements. Thus, Cook, et al. teaches away from a structure with pins as recited in Claim 6, for use in a low profile transformer for use on a printed circuit board and other applications. There is also no teaching or suggestion from the references or otherwise placed on the record, as required, to show a motivation for combination. Moreover, neither Cook, et al. nor Eng, Jr., et al. teach or suggest the transformer structure recited in Claim 6. Therefore, Applicant respectfully submits that Claim 6 would not be obvious over Cook, et al. in view of Eng, Jr., et al.

Claims 7-8 and 10-13 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Cook, et al. in view of Equi, et al. (U.S. Patent No. 4,939,623). The Examiner contends that Cook, et al. discloses the invention claimed in Claim 7-8 and 10-13 except for the bobbin including a mounting structure for receiving a printed circuit board (PCB). The Examiner further contends that it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a mounting structure in the bobbin structure of Cook, et al. as suggested by Equi, et al., for the purpose of facilitating mounting. Applicant respectfully disagrees.

Claim 7 claims a transformer wherein a second bobbin member includes a structure for receiving a PCB wherein the structure is **disposed on the flange**. An embodiment of this structure is identified by reference character 80 in Fig. 1. This structure 80 is clearly disposed on the flange 21. Equi, et al. does not teach a mounting structure disposed on the flange as recited in Claim 7. By contrast, Equi, et al. teaches a pair of flanges (36) which includes a recess (38) dimensioned to receive the interior edges of a PCB (Col. 2, lines 43-45). Thus, Equi, et al. teaches that the recess for receiving the PCB is not disposed on the flange, but is instead **part of** the flange. Neither Cook, et al. nor Equi, et al. teach or suggest the transformer structure recited in Claim 7. Therefore, Applicant respectfully submits that Claim 7 is not obvious over Cook, et al. in view of Equi, et al.

Claim 8 claims a transformer wherein the second bobbin member includes a structure for receiving a PCB that is disposed on a side region of the transformer. As stated in the specification in this case, an advantage of providing a side mounting structure on the transformer is that the overall thickness of the device using the transformer can be reduced (Page 13, lines 13-21). Equi, et al. teaches a transformer assembly in applications where the thickness of the housing is to be minimized. By contrast, Cook, et al. teaches a structure having cover elements 50, 51 shown in Figs. 1-6, that provide extra thick insulation (Col. 5, lines 12-22). Thus, the transformer structure taught in Cook, et al. does not teach or suggest use in applications where minimizing the thickness of the housing is desired. There is no teaching or suggestion in either Cook, et al. or Equi, et al or

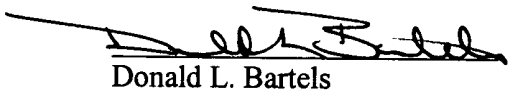
otherwise placed on the record, as required, to show a motivation in support of the combination. Moreover, as noted in *In re Lee, supra,* conclusory statements do not adequately address the issue of motivation to combine. Therefore, for all the above reasons, Applicant respectfully submits that Claim 8 is not obvious over Cook, et al. in view of Equi, et al.

Claim 10 claims a transformer that includes a structure such that the PCB is disposed parallel to the walls of the first bobbin member. The Examiner identified walls 39,40 and 25, 28 in Cook, et al., as shown in FIG. 1. The cover elements 50, 51 taught in all embodiments in Cook, et al., however, cover the bobbin member in such a way that precludes mounting a PCB parallel to these walls (Figs. 1-6). Thus, Cook, et al. cannot be combined with Equi, et.al. in a way to teach or suggest the structure with a PCB disposed parallel to the walls of the bobbin member as recited in Claim 10. Therefore, Applicant respectfully submits that Claim 10 would not be obvious over Cook, et al. in view of Equi, et al. Claims 11-13 depend from Claim 10 and are respectfully submitted as being non obvious for the same reasons as for Claim 10.

Based on the above, Applicant respectfully submits that all pending claims, Claims 1-16, in the present application are in condition for allowance. Such allowance is respectfully solicited.

Attached hereto on pages 15-20 is a marked-up version of the changes made to the specification by this amendment. The attached pages are captioned "**Version with markings to show changes made.**"

Respectfully submitted,



Donald L. Bartels
Registration No. 28,282

February 7, 2002
COUDERT BROTHERS LLP
600 Beach Street, 3rd Floor
San Francisco, CA 94109
Telephone: (415) 409-2900
Telefax: (415) 409-7400

Version with markings to show changes made

In the Specification:

Paragraph beginning at page 4, line 16, has been amended as follows:

FIG. 1 shows a transformer 100 including a first bobbin member 40 and a second bobbin member 20 including at least a primary and secondary winding. The first and second bobbin members [20, 40] 40, 20 are adjacent to each other, and are coupled together. In some embodiments, the second bobbin member 20 may occupy a larger area than the first bobbin member 40. As shown in FIG. 1, the first bobbin member 40 may be disposed on and may be partially enclosed by the second bobbin member 20. Both the first and second bobbin members [20, 40] 40, 20 may include portions formed from molded plastic.

Paragraph beginning at page 6, line 10, has been amended as follows:

The flange 21 advantageously increases the creepage distance between the two windings 51, 52 at regions of the transformer 100. Lengthening the creepage path (i.e., the path across the surface of a dielectric between two conductors) reduces the possibility of damage due to, e.g., arcing between the windings on the first and second bobbin members [20, 40] 40, 20. In the transformer 100 shown in FIG. 1, for example, the creepage path begins at the winding 52 on the second bobbin member 20, passes outwardly across the lower surface of the wall 27, up the face of the flange portion 21(a), down the opposite face of the flange portion 21(a), across the upper surface of the wall 27, and to the coil [52] 51 on the first bobbin member 40. In embodiments of the invention, the creepage distance can be increased without increasing the length or width of the walls of the first and second bobbin members [20, 40] 40, 20.

Paragraph beginning at page 7, line 5, has been amended as follows:

A core 70 such as a ferrite core passes through the first and second hollow portions of the first and second bobbin members [20, 40] 40, 20. The core 70 may be formed from portions having any suitable shape. For example, the core 70 may be formed by using two U-shaped core portions coupled together to form a ring. Alternatively, the core 70 may be formed by coupling a U-shaped core portion and an I-shaped bar to form a ring. The core may also be formed from E-shaped core portions. For example, the core 70 may include two E type core portions coupled together or an E and an I type core coupled together.

Paragraph beginning at page 7, line 12, has been amended as follows:

The core 70 may have a potential which is between (e.g., halfway between) the potentials of the windings 51, 52 on the first and second bobbin members [20, 40] 40, 20. In preferred embodiments, the first and second bobbin members [20, 40] 40, 20 may also include additional flanges to increase the creepage distance between the core 70 and the windings 51, 52 on respective bobbin members [20, 40] 40, 20. For example, the first bobbin member 40 may include a flange 43 which increases the creepage distance between the winding [52] 51 on the first bobbin member 40, and the core 70. In this example, the flange 43 may have a number of flange portions and these flange portions may be closely adjacent the core 70 to shield portions of the core 70 from the winding 51. Preferably, the flange 43 conforms to the outer surface of the core 70. In the example shown in FIG. 1, the flange portions are on a wall 46 of the first bobbin member 40 and are perpendicular to the wall 46.

Paragraph beginning at page 7, line 23, has been amended as follows:

Preferably, as shown in FIG. 1, a flange portion 21(b) of the second bobbin member can extend beyond the back of the winding (e.g., a primary winding) 51 on the first bobbin member 40. Alternatively or additionally, a flange portion 21(a) of the second bobbin member can extend beyond the side of the winding [50] 51. Extra creepage distance is provided by these flange portions and the transformer height can be reduced. If desired, the creepage distance between elements in the transformer may be increased in other ways. For example, the walls of the first and second bobbin members can be made wider to increase the creepage distance between respective windings on the first and second bobbin members [20, 40] 40, 20. In another example, additional flanges may be present on the walls of the bobbin members. For example, flanges may be on the outer walls 26, 46 of the first and second bobbin members [20, 40] 40, 20 at the core side of the transformer on either or both sides of the core 70. This could result in a slight increase in the height of the core, but can make the transformer narrower. This may be particularly useful for EE or EI type cores.

Paragraph beginning at page 8, line 13, has been amended as follows:

FIG. 2 shows another view of the transformer 100. In FIG. 2, the outer surface of the second bobbin member 20 is shown more clearly. The second bobbin member 20 includes pins 92 which are electrically coupled to the winding on the second bobbin member 20. A flange 23 may

be present on the outer wall 26 of the second bobbin member 20. The flange 23 may be disposed adjacent to the core 70 to increase the creepage distance between the winding on the second bobbin member 20 and the core 70. Ribs 24 may be present to provide structural support for the flange 23 disposed around the core 70. The ribs 24 also increase the creepage distance between the windings on the first and second bobbin members [20, 40] 40, 20, especially the portions of the windings exposed by the slots between the pin supports 95. In this example, the first bobbin member 40 may include a recess 81 (e.g., a slot) for receiving a printed circuit board.

Paragraph beginning at page 9, line 7, has been amended as follows:

FIGS. 4 and 5 show exploded views of a preferred transformer embodiment. As shown in these Figures, a conductive layer 90 may optionally be provided between the first and second bobbin members [20, 40] 40, 20 of the transformer 100 before they are fitted together. The conductive layer 90 can be in the form of a ring and may be a Faraday shield. Typically, the conductive layer 90 comprises a flat copper shield. The conductive layer 90 may include a tab 99, which may be bent over and may be electrically coupled to one of the pins (e.g., a ground pin) on the first bobbin member 40. Conductive charge can be removed from the region between the windings of the first and second bobbin members by using the conductive layer 90. Charge can pass to the conductive layer 90, through the tab 99 and to a pin coupled to the tab 99. Advantageously, the thickness of the walls of the first and second bobbin members [20, 40] 40, 20 can be reduced by using the conductive layer 90 between the bobbin members [20, 40] 40, 20. Minimizing the wall thickness reduces any undesirable leakage inductance between the windings on the first and second bobbin members. Also, by minimizing the wall thickness, the height of the resulting transformer 100 can be reduced. The design also allows for the removal of a Y-capacitor (see e.g., FIG. 17) which might otherwise be needed. This is because the common mode EMI is significantly reduced by the presence of the EMI shield.

Paragraph beginning at page 9, line 23, has been amended as follows:

With reference to FIGS. 4 and 5, the core 70 may include two core portions 70(a), 70(b). In this example, both core portions 70(a), 70(b) are U-shaped. When the ends of the U-shaped core portions are joined together, they form a ring. One end of the ring passes through hollow portions in the first and second bobbin members [20, 40] 40, 20, while the other end of the ring is outside of the first and second bobbin members [20, 40] 40, 20.

Paragraph beginning at page 10, line 12, has been amended as follows:

The second body portion 29 is preferably adapted to receive, and is preferably cooperatively arranged with, a tubular portion 49 on the first bobbin member 40 (see FIG. 7). For example, the second body portion 29 may be, for example, in the form of a cylinder which has a wider diameter than a cylindrical tubular portion 49. The tubular portion 49 of the first bobbin member 40 can be inserted within the hollow region of the second body portion 29 so that the first and the second bobbin members [20, 40] 40, 20 are coupled together. Advantageously, the first and the second bobbin members [20, 40] 40, 20 may be coupled together without the need to use a shroud to hold the first and second bobbin members together. Since a shroud can be excluded in preferred embodiments of the invention, the size of the transformer can be reduced by the space which might otherwise be taken up by the shroud. Moreover, the tubular portion 49 can increase the creepage distance between a conductive layer (e.g., a Faraday shield) between the first and second bobbin members, and the core passing through the bobbin member.

Paragraph beginning at page 11, line 13, has been amended as follows:

As noted above, portions of the first and second bobbin members [20, 40] 40, 20 may be cooperatively structured so that the first and second bobbin members [20, 40] 40, 20 can be joined together. Exemplary cooperative structures are shown in FIGS. 10 and 11. FIGS. 10 and 11 show a first bobbin member 40 and a second bobbin member 20. The second bobbin member 20 includes a second body portion 29 including two sections 29(a), 29(b) which form a recess. The walls 26, 27 of the second bobbin member 20 are axially spaced from each other (e.g., with respect to the axis 105) and extend away from the second body portion 29 in a radial direction. The first bobbin member 40 includes a first body portion 45 coupled to a pair of walls 46, 47. The walls 46, 47 extend away from the first body portion 45 in a radial direction and are axially spaced from one another. A portion of a ring-shaped core 70 is disposed within hollow regions of the first and second body portions 29, 45, while an opposing portion of the core 70 extends past the outer edges of the walls 26, 27, 46, 47. A flange portion 21(b) is on a wall 27 of the second bobbin member 20 and extends away from the other wall 26 of the second bobbin member 20. The flange portion 21(b) partially encloses the first bobbin member 40 and the winding (not shown) thereon.

Paragraph beginning at page 12, line 12, has been amended as follows:

Specific features of the cooperatively structured portions of the first and second bobbin members are more clearly shown in FIGS. 12 and 13. The first bobbin member 40 includes a tubular portion 49 including a ledge 49(a). The second bobbin member 20 includes a second body portion 29 with sections 29(a), 29(b) forming a recess. The recess receives the tubular portion 49 of the first bobbin member 40. When the first and second bobbin members [20, 40] 40, 20 are coupled together, the ledge 49(a) can abut an inner section 29(b) of the second body portion 29 of the second bobbin member 20.

Paragraph beginning at page 12, line 19, has been amended as follows:

The cooperatively arranged structures shown in FIGS. 10 to 13 are especially suitable for increasing the creepage distance from, e.g., the core and a conductive layer (e.g., a Faraday shield) disposed between the first and second bobbin members [20, 40] 40, 20. For instance, with reference to FIG. 10, the creepage path between the core portion along the axis 105 and the conductive layer 90 passes from the core 70, down the inner face of the tubular portion 49, up the outer face of the tubular portion 49, and to the conductive layer 90. If, for example, the section 29(b) of the second body portion 29 is not present (as in some embodiments), the creepage path would extend from the core 70, up the outer face of the section 29(a) of the second body portion 29, and to the conductive layer 90. Accordingly, the embodiments shown and described with reference to FIGS. 10 to 13 are especially desirable to increase the creepage distance between the core and a conductive layer disposed between the bobbin members 20, 40. By doing so, very low profile transformers can be made.

In the Claims:

Claims 1, 6, 13, and 16 have been amended as follows:

1. (amended) A transformer having at least one primary winding and one secondary winding wound about a common axis comprising:

a first bobbin member including

a first body portion defining a first hollow region, and

axially spaced walls extending radially away from the first body portion; and

a second bobbin member including

a second body portion defining a second hollow region,

axially spaced walls extending radially away from the second body portion, and

a flange on one of said axially spaced walls of the second bobbin member and extending away from another of the [other] axially spaced walls of the second bobbin member; and

wherein the first bobbin member is disposed adjacent to the second bobbin member and is partially enclosed by the flange, said primary and secondary windings respectively wound about said first and second body portions.

6. (amended) The transformer of claim 1 wherein each of first and [secondary] second bobbin members comprises a plurality of pins.

13. (amended) The transformer of claim 12 wherein the second [bobbin member further] body portion comprises two sections forming a recess, [wherein] the recess being shaped for receiving [is cooperatively arranged with the tubular portion and is adapted to receive] the tubular portion.

16. (amended) A transformer assembly adapted to receive at least one primary winding and one secondary winding wound about a common axis comprising:

a first bobbin member including

a first body portion defining a first hollow region, and

axially spaced walls extending radially away from the first body portion; and

a second bobbin member including

a second body portion defining a second hollow region,

axially spaced walls extending radially away from the second body portion, and

a flange mounted on one of said axially spaced walls of said second bobbin member and extending away from another of said [other] axially spaced walls of said second bobbin member; and

wherein the first bobbin member is disposed adjacent to the second bobbin member and is partially enclosed by the flange, said primary and secondary windings respectively wound about said first and second body portions.